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Conner Re-Elected President Florida Citrus Mutual

Florida Frost Warning Service Reports Findings On Freeze

Citrus Production Costs Show Decrease In '56-'57 Season

More Citrus Was Processed In 1958 Than Last Year

Morton Tells About Organization of Citrus Mutual At Annual Meet

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Re-Elected President
FLORIDA CITRUS MUTUAL
At Annual Meeting

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VOL. 39 — NO. 7 JULY, 1958 BARTOW, FLORIDA

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W. L. Thompson

Citrus Insect Control

R. M. Pratt

For July 1958

W. L. THOMPSON
R. M. PRATT
R. B. JOHNSON*
Florida Citrus Experiment Station, Lake Alfred

R. B. Johnson

It now appears that the prolonged cold winter delayed not only the growth and blooming of citrus trees, but also the life cycles of scale insects. In most years a peak of hatching of both purple and Florida red scale is reached in late May or early June. This year, the corresponding peak will not occur until early July. This indicates that the highest level of infestations, which usually occurs about mid-July, will not occur until late July or even August.

Purple scale infestations increased sharply in June, but the general level is still below average. The increasing trend is expected to continue through July and lead to higher levels in August.

Red scale infestations are still scarce in the northern districts, but the number of infestations is increasing steadily, and where this scale is present, a rapid increase in population may be expected.

Purple mite infestations increased rapidly in May and June, and reached a near-record level late in June. Infestations are expected to decline sharply in July.

Rust mite infestations were generally low in June, but there was a sharp increase in the fruit. The population will increase rapidly in July, and the peak will not be reached until August.

The mealybug population is at the lowest level in years, but a few infestations were reported in June.

SCALE AND MITE ACTIVITY BY DISTRICTS*

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves
West Coast	3.07	.28	1.72	1.17
Indian River	4.75	2.71	2.47	1.82
Upper East Coast	3.43	0	1.67	.40
Gainesville	2.83	0	2.00	2.00
Orlando	3.62	1.16	2.32	.38
Brooksville	4.38	.26	3.25	.58
Ridge	4.52	2.77	3.04	1.35
Bartow	5.48	.60	2.00	2.50
State Average	4.12	2.48	2.44	1.22
Last Year	4.75	4.14	1.62	2.11

* Third week in June. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

SPRAY PROGRAM

The control of scale and rust mites is of prime importance this month. Due to the late bloom and dry weather, the beginning of oil sprays has been delayed. This means that some groves will not be sprayed until August. Good color is an important factor where fruit is grown for the fresh fruit market, but the maximum amount of solids is also important in early varieties for fresh fruit and for all varieties that are to be processed. Where oil is to be used, it should be applied as soon as possible. In groves where either parathion or malathion are to be used, the application can be delayed until convenient to spray since neither of those materials affect solids or degreening. A scalicide, preferably parathion or malathion should be applied to trees that were defoliated last winter. If purple scale is allowed to go unchecked, a heavy infestation is likely to develop by fall or next spring. Even though there may not be a noticeable amount of scale on the current years growth, the scale population should be kept to a minimum. Next year there will be more inside growth, and it will be difficult to get a thorough coverage. Following the 1940 freeze, heavy infestations developed by fall or the next spring. This year most cold injured groves were sprayed with one to two nutritional sprays which makes conditions favorable for scale increases.

Scale Control: For early varieties of oranges and grapefruit use either 1.7 pounds of 15 percent parathion or 5 pounds of malathion per 100 gallons. If purple mite is a problem, a mixture of 1 pound of parathion per 100 gallons plus .7 percent oil may be used. Color will not be affected as much following .7 percent oil as with 1.3 percent oil. A 1.3 per cent oil is still the standard scalicide spray and will give very good scale control.

Tangerines should be sprayed with either parathion or malathion for the best color and highest grade. Very good control has been obtained with either 1 pound of parathion or 3 pounds (25%) malathion per 100 gallons plus 5 percent oil. If the tangerines were sprayed this spring with a scalicide, make another application this summer to insure fruit free of green spots caused by purple and chaff scale. If oil is to be used apply it at 1 percent concentration, and make the application by July 15, to minimize the effect on color. See rust mite control for supplements.

Mealybug Control: If mealybugs are present, use either parathion or malathion as recommended for scale control.

Whitefly larvae will be easily killed during July, but thorough under leaf coverage is necessary. Either parathion or oil is effective.

Rust Mite Control: There are now several materials that can be used for rust mite control. Zineb is the most effective material and can be mixed with oil emulsion, parathion, malathion, or any combination of these scalicides. In 1957, June or July, zineb sprays controlled rust mite for the remainder of the year or longer. Such a long period of control should not be expected every year because last year was unusual. Last year rust mite was most numerous in July, and then

(Continued on page 18)

*Written June 23, 1958. Reports of surveys by Harold Holtsberg, Fort Pierce; J. W. Davis, Tavares; K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. M. Sutton, Lake Alfred.

SEASONAL TIPS FOR CITRUS GROWERS

1 2 3

Save time and money—cut out time-consuming sulfur applications. Apply DITHANE Z-78 with your summer oil spray.

Pick more fine-finish, brighter fruit—get safe, positive, long-lasting control of russeting, greasy spot, and rust mites.

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Representative of every interest
Representing no special interest

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Dr. Camp Relates Progress Of Florida Horticultural Society Over Past 72 Years

Agricultural people of the United States accept as a matter of course a lot of things which agriculturists in many other areas lack, and seldom realize how lucky they are.

Do you want to know how many bearing orange trees there are in Polk County? You can look it up in the Citrus Summary. Do you want to know how fast citrus trees are being planted? You can get it from the State Plant Board summary.

Do you want to know what the shipments were last year? You can get it from the Citrus Summary or from other sources, and if you want to know what the shipments were 10 or 20 years ago, you can find that too, and if you want to know how much fruit was shipped yesterday, the information is readily available.

All sorts of statistical information is at hand and more important still it is highly accurate, a major point in view of the lack of accuracy in the statistics available in many countries.

Do you need to know how to spray? There is a spray program put out by the Citrus Commission which is compiled by the numerous research men engaged in State and Federal research and which embodies the latest information. Supplementing this are bulletins and pamphlets and a lot of other information on materials, insects, diseases and what not, most of them both free and informative.

. . . BY . . .
DR. A. F. CAMP
PRESIDENT OF THE SOCIETY

You want to know how to fertilize your grove? There are bulletins and pamphlets which can provide a grower with a well rounded program. If a grower is immediately lacking in either spray or fertilizer information, he sometimes picks up the phone and calls the Experiment Station and asks for the information that he needs and, more amazing still, he quite frequently gets a satisfactory answer.

Sources of Information

If he wants to know whether scale are going up or going down in numbers or whether rust mites are having bigger families or just sitting around, he has a summary that comes out of the Station at regular intervals giving a forecast of insects to come. This information comes in general from tax paid sources, either State or Federal, though many articles from research agencies are published in the agricultural magazines. Another source of information is found in the Proceedings of the Florida State Horticultural Society where one may find a history of what has happened researchwise in the horticultural industries of Florida.

All the grower needs to know is where to look and who to ask and most of the questions that he may face have reasonably satisfactory answers. It is true that the answers may not always be as complete as we might wish. A grower may find out how to heat a grove instead of how to prevent a cold wave, or how to irrigate when he would like to know how to make it rain, or he may find out that he should spray with something to kill his expanding population of purple mites when he would really like to know how to

make nature take care of the mites for him. But then a lot of us are like small boys and frequently want more than is good for us, at least that is what papa told me.

All of this is accepted as a matter of course and the average fruit grower of Florida is probably one of the best informed in the world concerning things that affect his livelihood, and his information is reasonably accurate. None of this seems to strike the grower as unusual and he accepts it without question and occasionally grouses about the cost of research or statistical studies or some other line of work which brings in the information which he so frequently needs.

All of this strikes me very forcibly and makes me feel that the citrus grower, or the avocado grower, or the tomato grower in the United States is one of the lucky agriculturists. It has been my fortune to spend a great deal of time in citrus areas where such supplemental facilities are at a low ebb and where statistics are frequently of very doubtful value if not absolutely misleading.

Research

Research in many areas is rudimentary and furnishes very little in the way of practical information to the growers and statistics frequently are tied to politics.

While I think that most will agree that money spent for research at the Citrus Experiment Station for instance, has paid big dividends to the industry and most thinking people who have studied the matter will agree that more ought to be spent; the fact remains, that more money is now spent at the Citrus Experiment Station in Lake Alfred in a year than is spent on the entire agricultural research program of some countries having a large production of agricultural crops that are of fundamental importance to their national welfare.

In many of these areas growers must depend on their own ingenuity plus publications from other countries than their own in order to gain any technical knowledge concerning their particular problems. This is difficult because very often the information published in Florida, California, or Texas is geared to the local conditions so that the grower in another country must try to interpret what he has read as best he can. His own governmental agencies frequently give him very little help and insecticides are generally claimed by their sellers to be good for everything from purple mites to bunions, and little technical information is available to the grower that is definitely reliable.

For good spray schedules and fertilizer programs he has to depend on outside information and frequently the proper materials are not available even after he has found out what he believes he needs. If there are any new developments he may have to get the details by reading laboriously publications in the English language for instance, when, very often, his knowledge of English is not very good. Since I have had occasion to spend a lot of time with a good many of these citrus growers who are struggling to build up better and bigger production without help from economists and research men beyond the bare minimum, I can understand more readily the luck of a citrus grower in Florida who has all of these things at hand.

Horticultural Proceedings

Amongst the things that are of outstanding interest and value in Florida are the meetings and proceedings of the Florida State Horticultural Society, which had its beginnings in 1888 and has published its proceedings annually since 1894, and, consequently, has covered practically all of the modern history of our horticultural industries.

Do you want to know how cold it got in 1934 or during some other freeze? Do you want to know how much damage was done? You have only to consult the back numbers of the Proceedings of the Horticultural Society, and this year many a copy has become dogeared through constant reference to the results of the previous freezes, and freezes have not been the only "catastrophes" touted as destroyers of the industry by the pessimists. There was the whitefly, citrus canker, the citrus aphid, the Mediterranean fruit fly, and now the burrowing nematode which may easily be worse than any of them because it is underground and, consequently, hard to reach—they were all champs in their time though.

Then there were the epochs of low prices when "greenfruiters" received the same attention that whiskey gets at a WCTU convention, and overproduction caused as much chin wagging as a storm cloud slipping up on a Sunday School picnic. And there was the time when "bronzing" was being touted as the destroyer of the citrus industry in the sand hills and rough lemon stock was as popular as Nixon at a Democratic Convention, only to be solved by a dose of salts and a little zinc galvanizing.

It was at the meetings of the Horticultural Society that these "catastrophes" received careful and judicious consideration instead of being drowned in the hysteria of the moment. In the pages of the Proceedings is the running history of the changes and developments in the citrus industry. You can read reports on rootstocks, on fertilizers, or spray materials and, in fact, you can piece together an almost complete history of the horticulture industries of Florida from their modern beginnings and get a picture of the problems the industry has faced and the solutions which were used.

Information On 1895 Freeze

This year we had a freeze, and if you think it is bad, you can find a basis for comparison by reading the Proceedings of 1895, following the winter when "Old Man Winter" let go with both barrels on the citrus industry of Florida. You won't be any happier but you'll probably find you could have been unhappier.

In my letter to the members I used two quotations from the Proceedings of that year—one of these was quoted from the public press which was calling at that time for a return to diversified farming and the subordination of orange growing to a minor place in a subsistence program of peanuts, blackeyed peas, chufas and razorbacks, and the other was the contrasting declaration of President Adams for an all out intensification of citrus culture. The quotations are reproduced here because of the contrasting viewpoints and point up well the leadership that your Horticultural Society was offering even in that early day:

The press said: "It is only men of abundant means who should depend on orange culture as a single crop. Men who require a sure income for the support of their families should never build all their hopes on an orange grove."

President Adams answers: "The Florida horticulturist is a man who has mind and ambition and self respect. He is, and knows that he is, the equal in those respects of the merchant, lawyer, professor, or manufacturer. He expects to make as much money, to live in as good a house, as well furnished, and enjoy as much of life and its comforts, and educate his children as well as men in other callings. If he can do this he is satisfied. He will give his mind, energies and study to the work. As Chicago rose from her

baptism of fire, so will Florida rise from the devastation of frost, purified and exalted."

If you think that freezes are modern plagues brought on by over drainage, overcutting of timber, or the prevalence of atomic bombs, you can read about the freezes of 1835, 1857 and 1886 in papers in the Proceedings of 1895 and 1899.

While the Proceedings of 1895 are full of freeze reports and should have been published in blue ink, it is obvious that the industry has rebounded and was in an expansive mood a year later. In the Presidential Address of Dudley Adams in the 1896 Proceedings you find the following:

Humbugs

"Of all the insect plagues that infest the land and made endless and costly trouble by far the worst is the horticultural humbug. This bug appears in all sorts of disguises and in unexpected places. It will appear as a land agent and sell you a piece of No. 1 orange land below the frost line. As correspondent of a farm paper he will tell you how to grow 1,000 bushels of cassava on an acre of "poor pine land without fertilizer."

As a scientist he will talk scientifically and unintelligibly about the "conjunction of the planets" that will bring storms and deadly cold. The humbug will tell you how to plant an orange grove of five acres with five hundred budded trees; in three years they will bear one half a box to the tree of such fine quality, that 250 boxes will net $500, which will pay for all expenses and a handsome profit. He will explain how this crop will double each year and make the owner a Croesus. And thus the tenderfoot falls."

In 1917 cold struck again and as usual the industry was full of people who didn't know that it got cold in Florida, and the Proceedings have a decidedly bluish cast. This is reflected in the following from Mr. E. Bean who felt that there had been too much of the carnival aspect to the industry:

"Now I think this, that the horticulturists of Florida have tried, or, rather, a great many of them have tried to go too fast. I think if during their years of prosperity, they had salted down some of the results of the years—when they had a good year, saved some of it, instead of putting it into an enlargement of their acreage, or spending it in going to the World's Fair, or going North, or somewhere for the summer, that they could stand such a shock as this.

The trouble is that they have regarded it as a bonanza, and that there was no end to it, and now Providence has taught them that there is danger; but I do not believe that the whole business is a wreck, by any means. I know of large groves in the State today, where 90 per cent of the trees are putting out from the limbs or trunk. That means that there will be a crop within a year or so at the outside—an abundant crop. Others may not be so fortunate; but there will be oranges grown in Florida after we have all passed away, and it will be an interest and a large one."

One of the interesting aspects of the Proceedings is the change in tone with the years. In the early days the papers were given largely by growers and the discussions were vigorous and extensive. They were in the nature of experience meetings and opinions, no matter how boldly presented, are more adapted to raising discussions than scientific data which are hard to controvert.

Early Days

In those early days there were few technical men and little real research work, so every man was his own horticulturist. As research work progressed there was a gradual change in the tone of the Proceedings with more and more technical papers being presented and less of the experience type of papers, with a consequent decline in both the tone and quantity of discussion. When a grower retailed his opinions there were always growers ready to disagree, and the discussions were always voluble and at times a little on the heated side, but it's hard to get voluble about the accuracy of scientific data, and you can only argue with the interpretation and it is often a little hard for a layman to distinguish between fact and interpretation when the matter is presented by a technical man who perhaps isn't too sure either.

Reading the old copies of the Proceedings is good practice for new growers who think that 1957-58 produced the first freeze or the worst freeze in history, or that they have just started in recent years to ship green fruit, or that purple mites are a recent plague. A lot of interesting and educational information can be gleaned from the older Proceedings, and I might add for the benefit of the older members like myself who have wondered what our old friend H. Harold Hume would look like with a head of hair, that in the Proceedings of 1901 there is a picture of him with hirsute adornment worthy of a windsor tie politician of the old school—and wavy yet.

Prefer Technical Papers

I remember when the late Dr. Wilmon Newell became considerably exercised over the fact that the research men were stealing the Society from the growers, but the secretary, Col. Bayard Floyd, found on polling many members that they preferred the technical papers over the "experience" papers and the trend to technical papers continued. Nevertheless, the Society has remained essentially a growers society though a society of growers who want precise and accurate answers to the vital questions, for citrus in Florida has ceased to be horticultural entertainment and has become an industry that requires precise and correct information.

With the years the Society has widened its interests as the horticultural interests of the State have broadened. Not only have the sections on vegetables, ornamentals, and sub-tropicals become more extensive, but a section on processing has been added in recognition of the increasing importance of that field. After future freezes the Proceedings of 1958 and 1959 will be reread to find out what happened to the quality of canned products after the freeze of this past winter.

Always the Society has been a leader in the field of horticultural advancement, independent in its actions and free of outside control. It has given careful thought to the problems of the industry and arrived at sane decisions free of political or other bias. It was a power in the establishment of proper quarantine regulations, both state and national; gave constructive support to canker and later fruit fly eradication; it has supported research both to obtain the necessary funds and to afford a channel for technical publications readily available to those occupied with the problems of Florida's horticultural industries. It will continue to remain an independent, judicious body searching for accurate information on horticultural problems and furnishing leadership when needed.

The Proceedings will continue to be a running history of the industry and its meetings a forum for discussion of the problems of the industry. It is supported by its mem-

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Citrus Production Costs Show Decrease In '56-'57 Season

The production costs of citrus in 1956-57 decreased slightly from the previous season. Citrus production costs were at their highest in 26 years during the 1955-56 season as measured by citrus cost of production studies by the Florida Agricultural Extension Service and Experiment Stations. An increase of 12 percent over 1953-54 brought the operating or cash costs to $206.43 per acre in 1954-55. A further increase of 3 percent brought the average cost to $212.28 per acre in 1955-56. This was an increase of 76 percent over 1949-50. Citrus production costs per acre on bearing groves increased each season from 1939-40 to 1946-47 — seven successive seasons — then decreased for three seasons to 1949-50. Since the latter season, there were increases in 1950-51 and 1951-52 over the preceding season, then a slight decrease in 1952-53 followed by increases in each of the three seasons of 1953-55 and a decrease of 6 percent to $201 in 1956-57. See accompanying table.

Yields tended to increase over the period of these accounts, a portion of which was due to increasing average age of groves. Economic, weather, and other conditions resulted in commercial yield fluctuations on these groves of mixed citrus. These accounts were started in 1931-32 and each of the first seven seasons averaged less than 200 boxes per acre when average ages of trees varied from 17 to 19 years. Yield averages were again less than 200 boxes during the three seasons of 1939-42 when average ages were from 20 and 21 years. The yield was 305 boxes in 1943-44 with trees at 23 years of age. The average yield was below 300 boxes during the three succeeding seasons and 321 boxes in 1947-48 with trees at age 25. In six of the eight seasons since 1947-48 the average yields were above 340 boxes per acre, reaching 447 boxes in 1953-54 with average age at 30 years. The following season, 1954-55, the yield averaged 356 boxes with tree age at 31 years. The 1955-56 yield was 292 boxes, the lowest since 1949-50.

Yields by 5-year averages, returns above operating cost and average age of trees were:

	Yield per Acre	Age of Trees	Returns Above Operating Cost
1931-36	18	126	$ 36
1936-41	19	175	44
1941-46	23	250	322
1946-51	26	314	181
1951-56	30	359	117

The average yield for the five seasons of 1951-56 at 359 boxes per acre was almost three times the 5-year average of 1931-36, more than twice the 1936-41 average, 44 percent above 1941-46, and 11 percent higher than the 1946-51 average.

1955-56 Season. The yield in 1955-56 at 292 boxes per acre was the ninth highest of 25 seasons on those groves, being exceeded in eight of the 10 most recent seasons of 1946-56. Labor, power and equipment cost in 1955-56 at $103.60 per acre was the highest of 25 seasons and more than four times such costs in each of the eight seasons of 1932-40 and more than three times such costs in each of the 12 seasons of 1931-43. Money spent for fertilizer materials averaged $59.81 per acre. This was the fourth highest such figure of these seasons and more than three times the average for 4 of these seasons. Money spent for spray and dust materials averaged second highest in 1955-56 at $20.10 per acre. This was more than five times the average in the first six seasons and more than twice that for 16 seasons. State and county taxes at $12.74 per acre were the highest of 25 seasons and were more than twice that for 15 seasons. Taes at $11.76 in 1931-32 were second to the $12.74 figure for 1955-56.

ZACH SAVAGE
AGRICULTURAL ECONOMIST
AGRICULTURAL EXPERIMENT STATIONS

Operating costs per acre averaged $214.97 per acre, the highest of the 25 seasons up to 1955-56. This figure was more than three times such costs in 10 of these seasons and more than twice that for 13 seasons. Interest at 6 percent on estimated grove valuation was $65.82 per acre in 1955-56 and 1954-55—the highest figure of the 25 seasons. Total cost at $280.79 per acre in 1955-56 was the highest of 25 seasons and more than twice that for 13 seasons. Much of these increases in costs were due to decreases in the value of the dollar. Some of the increases were due to increasing age of trees requiring added expenditures for some items.

Yields and Per-Box Cost. Increased yields tended to offset increases in per-acre costs. An operating cost of 51 cents per box in 1931-32 was not exceeded until 1944-45 when a hurricane lowered the yield. Other seasons when this figure was exceeded were in 1946-47 at 55 cents, in 1954-55 at 58 cents and in 1955-56 at 74 cents. There were eight seasons when such costs were less than 40 cents, six seasons from 40 to 45 cents, and nine seasons from 50 to 55. Cost per box with interest on grove included was highest during the season of 1955-56 at 96 cents per box with 1933-34 second at 91 cents. The season with lowest such cost was 1943-44 at 41 cents. The 25 year average was 62 cents.

On-Tree Price. The on-tree price received for fruit from groves in 1955-56 was $1.13 per box. This was 11 cents more than the average

(Continued on page 13)

Comprehensive Program To Be Presented At Camp McQuarrie

The Silver Anniversary Edition of the popular Citrus Growers Institute will be held Monday to Friday, August 11-15, 1958, according to Lake County Agent R. E. Norris, the Institute manager. All citrus growers and their families are cordially invited to attend the Institute which is held at 4-H Club Camp McQuarrie, near Astor Park in Lake County.

Individuals and families desiring to stay at Camp McQuarrie over night are asked to make their reservations with Norris, whose address is Box 1165, Tavares, Florida. Those planning to stay over night should bring sheets, pillows, towels and personal items. There is no charge for sleeping accommodations at the camp and they are issued as long as they last on the basis of the order in which reservations are received.

Nationally Known Speaker on Program

In addition to the well known and outstanding industry figures who will appear on the program, a featured speaker is Doctor Kenneth McFarland of Topeka, Kansas, the Educational Consultant of General Motors Corporation. Doctor McFarland is known as America's number one speaker and will be on the program at 1:30 p. m. on Tuesday, August 12.

OFFICIAL PROGRAM

25th Annual Citrus Growers Institute
Camp McQuarrie, Lake County
Florida

Monday to Friday - Aug. 11-15,1958

Monday, August 11

R. E. Norris in charge

2:00 - 6:00 p. m. Registration

Mrs. Dorothy Fraser, Registrar

6:15 p. m. Supper — Mess Hall

8:00 p. m. — Assembly — Auditorium

Tuesday, August 12

K. S. McMullen, Extension Service District Agent, in Charge

7:15 a. m. Breakfast — Mess Hall

8:30 a. m. Announcements — Auditorium

Fred P. Lawrence, Citriculturist, Agricultural Extension Service, Presiding

Invocation — Rev. Jesse Jones, Pastor First Methodist Church, Tavares

Welcome — Karl Lehmann, Secretary, Lake County Chamber of Commerce

Opening Remarks — Dr. M. O. Watkins, Director, Florida Agricultural Extension Service

25 Years of the Citrus Institute— R. E. Norris, Lake County Agricultural Agent and Institute Manager

"The Outlook for the 1958-59 Citrus Season" — Dr. H. G. Hamilton, Head, Department of Agricultural Economics, University of Florida

Intermission

"Trends in the Fresh Fruit Industry" — R. V. Phillips, Manager, Haines City Citrus Growers Association

"Trends in the Processing Industry" — Marvin Walker, General Manager, Florida Citrus Canners Cooperative

12:15 Lunch — Mess Hall

1:30 — Joe N. Busby, Assistant Director, Agricultural Extension Service, Presiding

Address: — Dr. Kenneth McFarland, Educational Consultant, General Motors Corporation

"What are Nucellar Seedlings"— Dr. A. P. Pieringer, Assistant Horticulturist, Citrus Exepriment Station

Intermission

"Virus Diseases and their Effect upon Florida Citrus" — Dr. L. C. Cochran, Horticulturist, U. S. Department, Orlando

"Five Years of Budwood Certification" — Gerald Norman, In Charge, Budwood Certification Program, State Plant Board

4:00 p. m. Adjourn — Swimming, Boating, Fishing, Horseshoes, etc.

6:15 p. m. Supper — Mess Hall

8:00 p. m. Auditorium — Group Singing and Entertainment with Ned Cake, Song Leader and featuring Morris Anderson and his accordion.

Wednesday, August 13

K. S. McMullen, in Charge

7:15 a. m. Breakfast — Mess Hall

8:30 a. m. Announcements — Auditorium

Everette Fischer, Assistant Marion County Agricultural Agent, Presiding

"Citrus Production Management Problems" — Jack T. McCown, Assistant Citriculturist, Agricultural Extension Service

"Some Suggestions for Handling Cold Injured Citrus Trees this Fall and Winter" — Fred P. Lawrence, Citriculturist, Agricultural Extension Service

Intermission

Address: — John M. Fox, President, Minute Maid Corporation

"Plans of the Florida Citrus Commission for the Coming Season" — Key Scales, Jr.

12:15 p. m. Lunch — Mess Hall

1:30 p. m. — F. S. Perry, District Agent, Agricultural Extension Service, Presiding

"A History of the Florida Citrus Industry" — Randall Chase, Chase & Co., Sanford

"A Review of the Trends in Citrus Fertilization for the Past 25 Years" — Dr. Paul F. Smith, Plant Physiologist, U. S. Department of Agriculture, Orlando

Intermission

"State Plant Board Programs and Regulations that Affect the Citrus Grower" — Dr. C. W. Cowperthwaite, Plant Commissioner

"Optimum, Deficiency and Toxicity Levels of Plant Nutrients" — Dr. O. C. Bryan, Technical Director, Soil Science Foundation

4:00 p. m. Adjourn — Swimming, Boating, Fishing, Horseshoes, etc.

6:15 p. m. Supper — Mess Hall

8:00 p. m. Auditorium — Group Singing and Entertainment, featuring Ned Cake and Morris Anderson

Thursday, August 14

K. S. McMullen, in Charge

7:15 a. m. Breakfast — Mess Hall

8:30 a. m. Announcements, Auditorium

Cecil Tucker, II, Seminole County Agricultural Agent, Presiding

"The Research Picture of the Burrowing Nematode as of Today" — Dr. R. F. Suit, Plant Pathologist, Citrus Experiment Station

"Citrus Mutual's Plans for the 1958-59 Season" — Vernon Conner, President

Intermission

"Quality in Citrus and Selling it on Pounds Solids" — Dr. Paul L. Harding, Plant Physiologist, U. S. Department of Agriculture

Producing Quality Citrus

"Rootstocks and Varieties" — William H. Mathews, Assistant Horticulturist, Agricultural Extension Service

12:15 p. m. Lunch — Mess Hall

1:30 p. m. — H. F. Swanson, Orange County Agricultural Agent, Presiding

Address: — William M. Fifield, Provost for Agriculture, University of Florida

"Pest Control" — W. L. Thompson, Entomologist, Citrus Experiment Station

"Irrigation and Weather Conditions" — Dr. John Sites Head, Fruit Crops Section, University of Florida

"Fertilization"—Dr. E. J. Deszyck, Assoc. Horticulturist, Citrus Experiment Station

Answering the Question Box

4:00 p. m. Adjourn, Fishing, Boating, Swimming, Horseshoes, etc.

6:15 p. m. Supper — Mess Hall

8:00 p. m. Auditorium —Group Singing and Entertainment Featuring Ned Cake and Morris Anderson.

Friday, August 15

K. S. McMullen, in Charge

7:00 a. m. Breakfast — Mess Hall

FEED MANUFACTURERS HONOR R. D. JACKSON

R. D. Jackson, president of Jackson Grain Co., was elected vice chairman of the board of the American Feed Manufacturers Association at its annual meeting in Chicago recently. Jackson has served as a member of the board for the past five years.

Membership includes feed manufacturers throughout the United States and in a few foreign countries.

Frank L. Coune, Jackson Grain director of research and nutrition, was elevated to the executive committee of the AFMA nutrition council. Coune has been chairman of the council's management survey committee.

THE FLORIDA STATE HORTICULTURAL SOCIETY

(Continued from page 7)

bers and deserves the support of many more who ought to become members. In view of the expansion of the industry, the membership ought to be 4 or 5 thousand and the Proceedings 2 or 3 times larger than they are now so as to include many papers which may not be given orally at the meetings.

It has always been the custom to appoint a membership committee to solicit new members among the growers and the companies that serve them, where many other organizations employ professional solicitation which comes to your eyes and ears continuously through the press, radio and television, the Society depends on its members. While I have appointed the usual membership committee, I want to appoint each member of the Society a membership committee to contact his neighbor who needs and should support the Florida State Horticultural Society with its long and prideful history.

900 CERTIFIED NURSERIES

Lake Alfred—Since Feb. 1, the State Plant Board has certified more than 900 citrus nurseries for the movement of citrus stock to commercial grove areas and has approved over 200 new sites for the establishment of citrus nurseries.

"This program of certification and approval is aimed at elimination of further movement of the burrowing nematode to areas not infested with spreading decline," board officials here explained.

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Florida Citrus Mutual's Board of Directors for the 1958-59 season, formally seated at the cooperative's 10th Anniversary meeting in Winter Haven, June 17th Seated left to right, E. S. MacKenzie, Brooksville; B. F. Wheeler, Oviedo; Howard V. Lee, East Lake Wales; vice president emeritus, James C. Morton, Auburndale; President Vernon L. Connor, Mt. Dora; vice president, J. J. Parrish, Jr., Titusville; Ford W. Moody, Palm Harbor; W. Max Acree, DeLand; John W. Parker, Arcadia; and L. W. Tilden Winter Garden. Standing left to right, Leo H. Wilson, Bradenton; Albert Carlton, Wauchula; Clayton Logan, Lakeland; Fred H. Adkinson, Minneola; vice president emeritus A. B. Michael, Wabasso; vice president Tom O. Brown, Frostproof; vice president C. F. Fawsett, Jr., Orlando; secretary Charles C. Partin, Kissimmee; W. H. McMullen, Tampa; and W. Alex Ryburn, Vero Beach. Robert J. Barben, Avon Park, was not present when this picture was taken. —Florida Citrus Mutual Photo.

The Struggle For A Scientific Use Of Magnesium In Fertilizer

BY
DR. O. C. BRYAN
TECHNICAL DIRECTOR
SOIL SCIENCE FOUNDATON,
LAKELAND, FLORIDA

This is an unusual record because magnesium has been long considered as an essential plant nutrient. The literature shows that it was one of the ten essential elements first announced by scientific workers more than a century ago. It was included in Leibig's "Mineral Theory of Plant Nutrition" announced in 1840, yet its use in fertilizer was not stipulated until the 1930's. The reason for this delay was due to the fact that it was carried as impurities in most of the early fertilizer ingredients such as stable manures, organic nitrogen and crude sources of potash. Considerable amounts of magnesium were also included as impurities in super phosphate and natural nitrate of soda. The average lime-stone - the universal soil amendment - carries from 1 to 5% magnesium. Hardwood ashes also carry a considerable amount of magnesium. So long as these materials were applied to the soil, magnesium was included as impurities, and there were no evidences of magnesium deficiencies.

The records indicate that most crops require about as much magnesium as phosphorous, but since phosphates are not as abundant in nature as magnesium and are not as readily available in the soil, the emphasis on phosphates in fertilizers became very marked. Because of the urgent need for phosphates, the early years of the industry centered around the manufacture of super phosphate. Since magnesium is a constituent of chlorophyll, it is universally present in organic matter, and practices which included good cover crops maintained a reasonably good supply of magnesium in the soil. The literature indicates that soils derived from magnesium silicates low in calcium, are infertile.

(Continued on page 19)

Conner Re-Elected President Of Florida Citrus Mutual...

At the 10th annual meeting of Florida Citrus Mutual held in Mayo Hall at Winter Haven on Tuesday, June 17, Vernon L. Conner, Mount Dora, was re-elected president for his second term. Other officers named by the directors were the following vice presidents: Tom Brown, Frostproof; C. E. Fawsett, Jr., Orlando; and J. J. Parrish, Titusville. Charles C. Partin, Kissimmee, was re-elected secretary and W. M. Acree was re-elected treasurer.

The organization increased their membership assessment to three-quarters of a cent per box. The additional per-box cost, it was pointed out will amount to 15 cents per 100 boxes.

Robt. W. Rutledge, general manager of Mutual reported that it would be necessary to make reductions in its operation costs unless the assessment was raised.

The increase was supported by voice vote of the approximately 2000 members present. Only opposition

to the increase came from director Ford W. Moody, Palm Harbor, who reported that Pinellas growers were lukewarm about Mutual's activities.

Directors, A. B. Michael, Wabasso, and James C. Morton of Auburndale, said that the organization's benefit to the growers was worth a great deal more than the modest assessment levied.

General manager Rutledge delivered an address devoted largely to reporting on the activities of Mutual during the past year. His speech is reproduced elsewhere in this issue.

A fried chicken dinner and entertainment by the Rebels quartet and also by Will Rogers was a popular part of the meeting.

PRODUCTION COSTS SHOW DECREASE

(Continued from page 8)

for the 25 seasons and the eight highest price of the 25 seasons. Receipts per acre in 1955-56 were $330.28 and this season ranked eighth in this regard among 25 seasons and was 32 percent more than the average of $250.64. The highest price received for fruit from these groves was $2.02 in 1944-45, and the average for 25 seasons was $1.02.

Net Returns. Returns above operating, or cash, costs per acre were $115 in 1955-56. There were 14 of the 25 seasons with a lower figure than this. The distribution of these seasons by returns above operating costs were:

$400 to $499 per acre 2 seasons
300 to 399 per acre 3 seasons
200 to 299 per acre 2 seasons
100 to 199 per acre 5 seasons
50 to 99 per acre 6 seasons
0 to 49 per acre 5 seasons
Less than 0 per acre 2 seasons

There were two seasons when returns did not pay operating costs.

When including interest on the estimated grove investment as a production cost, the figure for returns above operating costs is reduced by the amount of the interest. Net returns by season averages were:

$300 to 399 per acre 4 seasons
200 to 299 per acre 2 seasons
100 to 199 per acre 1 season
50 to 99 per acre 5 seasons
0 to 49 per acre 7 seasons
Less than 0 per acre 6 seasons

The average net returns per acre over the 25 seasons was $99.19.

Capitalized at 6 percent returns above operating costs in 1955-56 represented an average investment or value of $1,922 per acre. There were seven of these seasons, or 28 percent, when six percent interest or less was realized on the low grove investment figure placed on these groves by the operators for long-time fruit producing purposes.

DATA BY SEASONS FOR GROVES OVER 10 YEARS OF AGE, 1951-57

	1956-57	1955-56	1954-55	1953-54	1952-53	1951-52
Number of Grove Records	181	158	170	179	198	195
Total Acres of Groves	7146.3	6644.3	6513	6838	6969	6819
Average Acres per Grove	39.5	42.1	38	38	35	35
Average Age	32	32	31	30	29	29
Number of Trees per Acre	61	61	61	61	61	61
Percent Trees Grapefruit	28.0	27.5	30.3	28.6	29.7	30.0
Boxes Harvested per Acre	*	292	356	447	344	356
Costs per Acre:						
Labor, Power & Equipment	$113.71	$103.60	$ 91.31	$ 84.64	$ 81.01	$ 80.16
State and County Taxes						
Fertilizer Materials	55.50	59.81	66.43	60.61	55.89	61.65
Spray and Dust Materials	17.37	20.10	23.36	19.61	17.63	18.34
State and County Taxes	11.71	12.74	11.72	11.34	11.04	10.11
Miscellaneous	2.72	18.72	13.61	7.80	4.71	7.12
Total Operating Costs	201.01	214.97	206.43	184.00	170.28	177.38
Interest on Grove Valuation at 6%	67.73	65.82	65.82	62.91	61.07	61.45
Total Cost without Owner Supervision	268.74	280.79	272.25	246.91	231.35	238.83
Returns per Acre:						
Returns from Fruit	*	330.28	321.45	323.98	325.74	238.83
Net Returns	*	49.49	49.20	77.07	94.39	0.00
Returns Above Operating Cost	*	115.31	115.02	139.98	155.46	61.45
Cost per Box:						
Labor, Power & Equipment		.36	.26	.19	.24	.23
Fertilizer Materials		.21	.19	.14	.16	.17
Spray and Dust Materials		.07	.06	.04	.05	.05
State and County Taxes		.04	.03	.02	.03	.03
Miscellaneous		.06	.04	.02	.02	.02
Total Operating Costs		.74	.58	.41	.50	.50
Interest on Grove Valuation at 6%		.22	.18	.14	.18	.17
Total Cost without Owner Supervision		.96	.76	.55	.68	.67
Returns per Box:						
Returns from Fruit		1.13	.90	.72	.95	.67
Net Returns		.17	.14	.17	.27	.00
Returns above Operating Cost		.39	.32	.31	.45	.17

*Returns not yet available
Source: Growers cooperating with Florida Agricultural Extension Service and Experiment Station, Gainesville, Florida

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Orlando, Florida

Florida Frost Warning Service Reports Findings on Freeze

(Continued From Last Issue)

The sides of the ditches and flower beds were protected by 2"x10" pine or cypress boards. These boards prevented the soil from being washed away from the sides and also kept the flower beds from becoming too moist when irrigated for frost protection.

Water from the well ran into a ditch 12 inches wide and 16 inches deep. Two 1½ inch pipes carried water from this ditch into those running between the flower beds. Water from the well was sufficient to supply several igloos, each containing 4 flower beds and 3 ditches. Escapage of water was adjusted to maintain a depth of approximately 6 inches in the ditches under the cloth house.

When cold weather was forecast, the sheds were covered with cloth and the water turned on about 5 p. m. Covering required only a few minutes as the cloth was easily unrolled and tied to the iron pipes near the ground. When covering was completed and the water turned on, no further labor was required during the night. The following morning the cloth could be rolled back by two men in a very short time. It was always left rolled on top of the igloo when not in use.

To check the amount of protection realized by covering and irrigating, a shelter containing a thermograph and minimum thermometer was installed in one of these cloth houses. The shelter was set 2½ feet above the ground, just over the flowers, and 130 feet from the east end of the shed where water entered the ditches. The instruments were approximately 3 feet above the ditch. A minimum thermometer was placed at the same elevation in the same row, 50 feet from the east end.

These instruments were placed over the second flower bed from the south side of the igloo. There were two ditches and flower beds north of the instruments, and one ditch and flower bed south of them. To check the temperature in the unprotected area, a shelter containing a thermograph and minimum thermometer was placed 50 feet east and 100 feet north of the cloth-house. These instruments were at the same elevation above ground as those inside the igloo. Following is a comparison of minimum temperatures recorded at the outside check station with those under cover at distances of 50 and 130 feet from where the water entered the igloo.

The above Table shows that the temperatures 50 feet from the water entrance averaged 11.5° warmer 130 feet inside. This difference probably is due to the fact that the water had cooled slightly by the time it had reached the 130 feet station.

On cool nights when the igloo was not covered or irrigated, the minimum temperature averaged 0.4° warmer at both inside stations than at the outside check station. By subtracting this natural difference of 0.4°, it is seen that irrigating and covering increased the average temperture 11.1° 50 feet inside the cloth house, and 9.9° at a distance of 130 feet inside. These data show

Date	Min. Temp.	Duration in hours at and below: 32°	30°	28°	26°	24°	22°	20°
2-14-58	22.6	12.8	12.0	11.0	7.5	5.0		
2-1[illegible]-58	27	10.0	7.2	0.7				
2-18-58	23.5	15.0	14.0	11.5	8.3	2.4		
2-19-58	23.0	13.1	12.0	10.2	4.0	0.9		
2-20-58	24.0	7.0	4.3	1.9	1.9	1.0		
2-21-58	24.0	10.1	9.4	8.0	6.0	1.5		
2-22-58	30.0	7.4	3.5					

(°) Indicates degrees.

Station 1328-B (Mature Valencia trees)

Date	Min. Temp.	Duration in hours at and below: 32°	30°	28°	26°	24°	22°	20°
12-11-54	27.0	8.1	6.0	3.0				
12-16-54	28.0	4.0	3.0	2.0				
12-20-54	26.5	5.9	4.5	0.4				
12-21-54	24.9	9.0	8.0	6.5	2.5			
12-22-54	27.0	10.3	8.4	5.0				
1-14-55	24.5	3.5	3.0	2.1	1.0			
1-30-55	25.5	7.6	6.0	3.5	2.0			
2-13-55	27.0	10.1	8.0	3.0				

(°) Indicates degrees.

Date	Min. Temp.	Duration in hours at and below: 32°	30°	28°	26°	24°	22°	20°
11-28-56	22.5	12.0	11.0	9.4	8.0	4.0		
11-29-56	28.6	10.0	8.1					
12-27-56	27.4	8.0	6.5	5.0				
12-30-56	26.5	3.3	2.3	1.0				
1-19-57	22.5	9.8	9.0	5.0	4.0	2.0		
3-10-57	28.9	4.0	1.2					

(°) Indicates degrees.

Station 1328-B (Mature Valencia trees)

Date	Min. Temp.	Duration in hours at and below: 32°	30°	28°	26°	24°	22°	20°
12- 1-57	30.0	2.2	0.6					
12- 2-57	27.0	11.0	9.0	2.8				
12-12-57	21.7	11.0	9.2	8.0	6.0	3.4	1.5	
12-13-57	19.0	14.0	13.7	13.0	11.0	9.8	7.5	3.0
12-14-57	26.9	11.0	10.0	7.2				
1- 9-58	25.7	14.0	12.5	4.0	1.0			
1-10-58	24.0	13.6	12.9	11.5	9.5	3.0		
1-11-58	26.1	12.2	11.2	9.5	2.0			
1-12-58	30.0	4.2	2.0					
1-19-58	28.4	8.2	6.0	2.0				
2- 4-58	26.0	9.0	7.5	4.4	1.6			
2- 5-58	26.5	7.3	5.1	2.5				
2-14-58	23.6	10.1	8.8	8.0	6.5	4.0		
2-17-58	29.0	8.0	5.4					
2-18-58	23.0	11.5	10.4	8.0	4.0	1.0		
2-19-58	27.0	8.7	6.0	2.0				
2-20-58	25.5	7.0	3.7	2.2	0.5			
2-21-58	24.5	10.1	9.0	5.7	3.0			
3-22-58	32.0	1.0						

(°) Indicates degrees.

Station 1733-C (Mature grapefruit and orange trees)

Date	Min. Temp.	Duration in hours at and below: 32°	30°	28°	26°	24°	22°	20°
12- 1-57	32.0	2.0						
12- 2-57	29.7	4.5	2.0					
12-12-57	23.0	10.8	9.0	7.4	5.1	3.0		
12-13-57	23.0	14.2	14.0	13.0	8.5	4.0		
12-14-57	27.1	11.5	10.0	8.0				
1- 9-58	24.0	14.0	12.9	11.8	10.4	2.0		
1-10-58	25.0	14.2	13.1	11.9	6.0			
1-11-58	27.0	11.0	9.0	5.5				
1-19-58	27.4	12.0	7.7	4.4				
2- 3-58	29.0	5.0	4.0					
2- 4-58	25.0	8.2	6.1	4.8	3.0			
2- 5-58	26.0	12.1	11.0	5.0	1.8			
2-14-58	24.0	12.6	11.8	10.5	5.0	1.0		
2-17-58	25.0	10.0	8.2	7.0	2.0			
2-18-58	23.0	13.2	12.7	12.0	8.8	3.5		
2-19-58	26.0	13.0	10.0	8.5	1.0			
2-20-58	24.0	7.0	6.1	5.1	3.1	1.5		
2-21-58	28.0	10.5	7.4	1.0				
3-22-58	32.0	1.0						

(°) Indicates degrees.

that where sufficient water is available, this is an economical and efficient method of protecting plants against freeze damage.

The figures below are copies of the actual thermograph traces inside and outside the cloth house on a few of the cold dates. An indication of the great amount of heat retained by the cloth is shown by the sharp drop in temperature when the cloth was removed between 8 and 10 A. M.

The trace for the thermograph under cover shows a slight rise in temperature when the igloor was covered and the water turned on between 4 and 5 p. m. The rate of temperature fall was retarded considerably under the cloth and irrigated area, while a rather continuing fall occurred at the outside station. Note in Figure 1 on February 20-21, 1958, temperatures from 4 P. M. to 6 A. M. dropped only 14° while during the same period the outside station had a temperature drop 34°. The effectiveness of this type of protection is further borne out by the temperature traces of February 22, 23 and 24.

1957-58
CRITICAL TEMPERATURE OF CITRUS TREES AND FRUIT

Following are portions of data complied by the writer during the past several years relating freeze damage to minimum temperatures experienced by citrus trees and fruit. Notes on damage refer to that occurring to trees or fruit in the immediate vicinity of the thermometer, unless otherwise noted. All shelters contained minimum thermometers and recording thermographs at a height of 4½ feet above the ground.

The Navel oranges near this station had been picked before the December 11th freeze. A few small Valencia oranges nearby had become dry by the end of the season. No wood damage resulted from the freeze and defoliation was only 15 to 25 per cent. Similar temperatures in previous years caused considerable wood damage and nearly 100 per cent loss of fruit and foliage. The early and frequent periods of cold weather and resulting dormancy of the trees is thought to be the principal reason for the unusually small damage resulting from such low temperatures as occurred on December 20th and 21st.

Tree damage on November 28th confined to a few small outside limbs. Considerable amount of hesperidin specks appeared in Valencias and Navels, but all fruit remained firm and juicy until picked. Some Navels near top of trees good until picked in March. No loss by droppage. Some bloom on Navels by December 20th and all trees were in bloom by February 13th. No apparent damage to bloom by freeze after December 26th and trees had a near normal crop in November, 1957.

Oranges near shelter had become soft and slightly slick by December 17th. Fruit picked between December 27th and January 6th. Defoliation very heavy and wood damage severe by end of December. Succeeding freezes caused trees to defoliate 100 per cent and increased wood damage some. Trees were nearly bare at end of March, 1958, with very small amount of new shoots just appearing on large limbs. Pruning expected to be very heavy.

It is interesting to note the much greater damage during the 1957-58 season than occurred in 1954-55, even though the minimum temperature was only 2° lower, and durations at 28° and 26° were not as long as in the 1954-55 season. It is thought that by December 21st, 1954, the previous five freezes with minima in the middle to upper twenties, had caused the trees to become more dormant than they were on December 12, 1957. Under the more dormant conditions in 1954,

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the trees were less susceptible to freeze damage.

Although some ice was found in oranges in this grove on December 21st, frequent checks thereafter failed to disclose any sign of damage. During the latter part of March, the fruit was sold at premium prices, an indication of good quality. A few early unopened buds were out and were killed by the freeze on January 30th. By February 13th, new foliage and bloom buds were prolific but no damage from the low temperatures on that date.

Defoliation from November 28th freeze was estimated at 5 to 10 per cent on trees near the thermometer and very little wood damage was found there. Most outside fruit had some hesperidin specks and had softened by December 15th. Bloom buds were prolific on December 26th, and many were open by January 18th. Bloom and new growth was not damaged by freezes of December 27th and 30th, but nearly 100 per cent of it was killed on January 19th.

Only bloom and new growth inside the trees escaped damage. Some additional fruit was frozen January 19th, and nearly all outside oranges showed sign of having been frozen. Wood damage was confined to small limbs near the shelter, but was severe in nearby frostpockets. Heavy new growth and a light new bloom had appeared by March 10th and no injury occurred on that date. A less than normal, but fair crop was on the trees in November of 1957.

The greater tree damage resulting from the 22.5° recorded on January 19th, than from the same temperature on November 28th, is thought to be due to the flush condition of the trees as evidenced by the new growth and bloom on the trees in January.

This grove had a fair crop of oranges except in frostpockets where damage was severe in 1956-57 season. By December 17th, it was apparent that fruit was badly damaged and that trees would defoliate about 100 per cent. By the 27th, trees were defoliated and wood damage appeared to be severe in all areas of grove. On January 6th, 25-30 per cent of the fruit had dropped to the ground and that remaining on the trees was soft. Droppage continued throughout the season and very few oranges were left on the trees by the end of March; none was salvaged. Some new growth was noted on January 24th, but this was killed during the freezes of February. When checked April 18th, this grove had made very little recovery, indicating that very heavy pruning would be required, even many large limbs.

On December 23rd, defoliation was less than one per cent near this thermomenter. A very few small limbs showed split bark. Oranges were softening and were full of white specks. A few had fallen to the ground. Grapefruit had been picked before the December freeze. A small additional amount of foliage was damaged during the freezes of January 9th-11th. Even though very low temperautres occurred on several dates in February, no additional damage resulted during those freezes. Considerable new growth appeared between February 24th and March 10th, and a moderate bloom was seen by March 24th.

CONCLUSIONS

These and other data compiled or studied by the writer during the past 10 years indicate that, aside from minimum temperatures experienced and durations at low temperatures, dormancy is perhaps the greatest factor related to tree damage during freezes. This is pointed up by comparing temperatures and damage at station 1227 during the 1954-55 and the 1957-58 seasons. In 1954, December had four dates with minima ranging from 25°-28° prior to the extremely low temperatures recorded on the 20th and 21st. It is thought that these cold nights, preceded by cool weather in November, were sufficient to induce dormancy in the trees by December 20th. In 1957, November was very warm and only two cold nights, with minima of 32° and 29°, occurred before the severe freeze that arrived on December 12th. Tree damage was much more severe in December, 1957. than in December, 1954, even though the temperatures were only two degrees lower.

It is significant also that damage to mature trees generally was considered severe only at stations where the temperature dropped to 23° or lower with durations at 28° for 8 hours or more. During the 1957-58 season, several stations in the Upper East Coast District recorded 21°-24° with damage ranging from very little at 24° to heavy at 21°. At all stations where the tempera-

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ture fell to 21° or lower, damage was severe. Some 5 to 6 year old trees were killed to the bank where 17°-20° temperatures were recorded. During previous seasons, small to moderate damage occurred where minima of 25° were recorded before the trees became dormant, or after putting on new growth. Most small trees up to three years old were killed to the bank by temperatures of 23° or lower, with lesser damage resulting when minimum was above that temperature.

Tangerine trees generally showed less damage than orange and grapefruit trees experiencing similar temperatures.

Generally, severe damage does not occur to bloom and new growth unless the temperature drops as low as 26°. Some damage may occur at temperatures slightly above 26° when trees are covered with a heavy frost deposit.

On cold nights following warm days, the temperature usually must fall to 25° or lower and remain at or below 28° for more than 6 hours to cause oranges to be badly damaged by freezing. On cold nights following cold days, some damage may occur with minima as high as 26° and durations at 28° for as little as 4 hours. Large and thick-skin oranges will withstand slightly lower temperatures than will small and thin-skin ones. While Valencias may be frozen as quickly as other varieties of similar size and skin, they do not deteriorate as rapidly and except for the most severe freezes, usually have time to recover sufficiently to be marketed for fresh fruit or concentrate.

Some ice usually forms in tangerines when the temperature drops to 26° and remains at 28° or lower for four hours or more. Lower temperatures and longer durations will increase the damage proportionately.

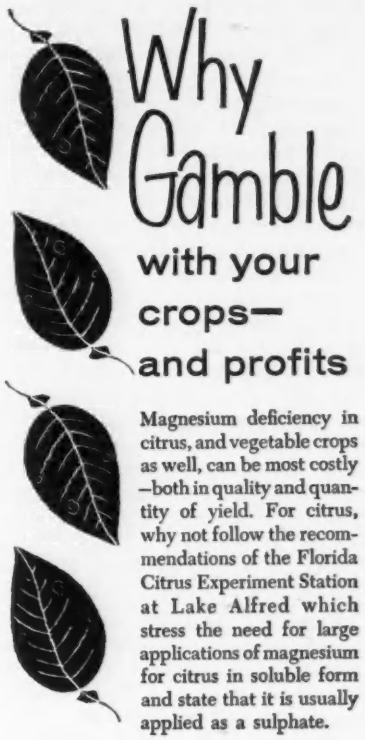
Grapefruit, being large, requires lower temperatures to cause freezing than does oranges and tangerines. On cold nights following warm days, the temperature usually must drop below 24° and remain below 28° for 8 hours to cause appreciable damage. Following very cold days, damage may result with minima of 25° and durations at 28° of 4 to 6 hours.

It must be emphasized that the above conclusions are for normal conditions and may vary at times. For instance, the warmer the daytime temperature, the longer the time required to cool fruit to the critical point. There may be some variance also between windy nights and still, frosty nights. By the phenomenon known as "undercooling", fruit may be brought to temperatures below the critical point without formation of ice and no damage will result. When disturbed by shaking or cutting, undercooled fruit will solidify immediately. This characteristic makes it very difficult to determine the ice content of fruit by cutting it while the temperature is below the critical point. Damage will be minimized by a slow thaw and cool days following a freeze and increased by a rapid thaw and warm weather.

USDA ANNOUNCES AMENDED PERSIAN LIME STANDARDS

Amended United States Standards for Persian (Tahiti) limes have been announced by the U. S. Department of Agriculture. They became effective June 20, 1958.

The standards are amended to change the percentage of U. S. No. 1 limes in the U. S. Combination grade from 75 percent to 60 percent as recommended by the Persian lime industry in Florida. Under the amendment, for the U. S. Combination grade, individual containers may have not less than 50 percent, by count, of U. S. No. 1 limes provided the average for the lot as a whole is not less than 60 percent.


Why Gamble
with your crops—
and profits
Magnesium deficiency in citrus, and vegetable crops as well, can be most costly—both in quality and quantity of yield. For citrus, why not follow the recommendations of the Florida Citrus Experiment Station at Lake Alfred which stress the need for large applications of magnesium for citrus in soluble form and state that it is usually applied as a sulphate.
Play safe with
BERKSHIRE'S
EMJEO*
(80/82% Magnesium Sulphate)
For many years this dependable source of soluble magnesia has been a favorite primary plant food of Florida growers—along with nitrogen, phosphorus and potash. Used in combination with Muriate of Potash, it is usually more economical than other forms of potash and magnesium.
Act now...
specify fertilizer
that contains EMJEO
Be sure that your fertilizer manufacturer includes EMJEO in your mixtures as a dependable and economical source of soluble magnesium.
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Berkshire
Chemicals
INC.
420 Lexington Avenue
New York 17, N. Y.
Sales Offices: New York • Chicago
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Pittsburgh • San Francisco

CITRUS INSECT CONTROL FOR JULY, 1958

(Continued from page 3)

infestations declined sharply whether zineb was used or not, and the mite was a minor problem after July. When weather conditions are favorable for rust mite in August and September, sprays will have to be effective much longer than in 1957. There are indications that under these conditions, whether zineb is used at 3 or 5 pounds per 500 gallons, control will not last through the fall and some respraying will be needed. Since two applications at 3 pounds per 500 gallons will last longer than one at 5 pounds, the most practical program is to use 3 pounds in the summer and use another 3 pounds in the fall or winter if needed.

Chlorobenzilate, at ½ to 1 pound or ½ to 1 pint per 100 gallons is as effective as sulfur, and can be combined with oil, parathion, or malathion. It will reduce a purple mite infestation but the period of control is relatively short.

The important thing to remember about rust mite control with any material is that the application should be made before a heavy infestation develops. Unlike sulfur, zineb and Chlorobenzilate are contact sprays and have no fumigating effect. Very thorough coverage is necessary because infested areas of the fruit may become rusty.

Where scalicide sprays are delayed and rust mite injury is likely to occur before the scalicide can be applied it is advisable to spray or dust sulfur. Sulfur also can be mixed with parathion and malathion, but not with oil. One gallon of lime-sulfur plus 5 pounds of wettable sulfur per 100 gallons is more effective than sulfur dust or wettable sulfur alone, but it should not be sprayed on early varieties of oranges, tangerines, and Temples. During periods of hot, dry weather any form of sulfur may burn, but a wettable sulfur spray appears to be the safest. Where it is necessary to control rust mite right before the scalicide spray is to be applied, dust with sulfur or spray with wettable sulfur, because both of these materials will be washed off by rains sooner than lime-sulfur. Do not apply oil on trees while there is sulfur on the exposed part of the fruit. Zineb or Chlorobenzilate also can be used in advance of the scalicide application, but more thorough coverage is required than with sulfur.

Purple Mite Control: Oil emulsion at 0.7 percent oil to 1.3 percent oil is the most effective miticide to use during the summer. The lower dosage of oil is usually supplemented with parathion for scale control. Kelthane at 1 to 1-½ pounds or pints per 100 gallons may be used where purple mite control is desired. This material can be mixed with parathion and malathion. Trithion is effective but may cause a burn where applied in the summer. In general, the organic miticides are not very effective in warm weather and it is doubtful whether it is economical to use them when the short period of control is considered.

Greasy Spot Control: Greasy spot control is most effective when the spray is applied after the summer growth is out. The most effective material has been .3 to .4 pound of metallic copper, in the form of a neutral copper, per 100 gallons. If the copper is mixed with oil, about .2 pound is sufficient.

Copper sprays may cause star melanose if the fruit is infected with melanose. However, the low dosage of .3 pound of copper is not so likely to cause star melanose as a higher dosage. For mild cases, an oil emulsion has been fairly effective. Zineb mixed with oil will aid in greasy spot control, but where this material is used at ½ to 1 pound per 100 gallons alone or with parathion, maximum control cannot be expected.

Details of spray schedules and the various materials used will be found in the "Better Fruit Program" and this should be consulted to determine which materials may or may not be combined. For further information, consult the Citrus Experiment Station at Lake Alfred, or Fort Pierce.

Morton Tells About Organization Of Citrus Mutual At Annual Meet

Over thirty years ago, there was held in the Williams Theater in Winter Haven one of the largest citrus gatherings ever held in Florida to that date. At this meeting, there was created a growers' "Committee of Fifty". On April 18, 1928, in the Municipal Auditorium in Orlando nearly 2,000 citrus growers met with the "Committee of Fifty" and formed the Citrus Clearing House Association. It was at this meeting that I first met Merton L. Corey of New York, who brought his outstanding ability and experience to help create the Citrus Growers Clearing House. Although this was thirty years ago, it does not mean that Mr. Corey and I are getting old. It just means that we have been here a long time.

Growers in those days were viewing with an alarm the increasing production of citrus in Florida and saying that it won't be many years until we produce thirty million boxes. This seems amusing in view of the fact that today we think of 120 million box crop with no deep concern. The main objectives of the Florida Citrus Clearing House Association are still objectives of the citrus industry.

The Florida Citrus Commission, created in 1935, followed closely on the heels of the Clearing House and has performed a wonderful service to the industry throughout the years. Florida Citrus Mutual was born out of desperation because during the years of 1946, 1947, and the major portion of 1948, growers were practically giving their fruit away. During 1947 and through December of 1948, growers received for their oranges an average of 53c per field box and for grapefruit 26c. This meant that the average grower did not receive cost of production for his fruit during that period. Many growers were deeply in debt, losing their property, and facing bankruptcy in 1947 and 1948 since the Florida citrus crop sold for 120 million dollars less than it had brought for the season three years before. It is estimated that every dollar that returns to citrus growers from northern markets has a turnover about six times and the entire economy of the State was seriously threatened. Leading citrus growers and shippers were deeply concerned.

I attended a meeting in Lakeland early in 1948, at which such men as Latt Maxcy, John Snively, C. C. Commander, Mack Morrow, A. B. Michael, and a number of other leaders were giving serious thought to the problem and on February 10, 1948, Florida Citrus Mutual was chartered under provisions of the State Agricultural Cooperative Act and the Federal Capper-Volstead

Act. It took better than a year to get the required 75 percent of the State's tonnage signed up on grower member contracts and Mutual did not begin full scale operation until February 28, 1949.

I want to here express my gratitude to the many individuals and organizations who so generously helped Mr. Corey and me during the campaign that created Mutual, and I want to thank every grower who then, and since then, signed a Mutual grower contract. Each one of us is deeply indebted to every other Mutual member for the loyalty that created and maintains Mutual and for the prosperity that it has helped to bring to the industry during the ten years of its existance.

The Florida Citrus Commission with its splendid and effective advertising program has made citrus fruit a household necessity in the United States and even overseas. Mutual with its price information and marketing details furnished to every grower and shipper has placed a stability in the industry that has overcome what the Florida Bankers' Association said in July 1948, "The brokers and dealers in the markets have no confidence in the stability of Florida Citrus prices or the system under which our fruit is sold — as a result, markets are frequently and almost regularly overloaded with disasterous results to the price structure." Mutual will continue to give stability to citrus marketing as long as you and I retain our membership and keep Mutual strong, active, and engaged in an ever-widening service to every citrus grower.

THE STRUGGLE FOR A SCIENTIFIC USE OF MAGNESIUM IN FERTILIZERS

(Continued from page 12)

Furthermore, caustic magnesia and magnesium chloride prove to be toxic to plants on some soils. From these records scientists and technical workers developed a feeling that magnesium was toxic, without appraising the soil reaction (pH) and calcium factors.

This was the prevailing opinion in Florida until 1930. Many plant abnormalities were in evidence at that time and the problem of citrus bronze was very acute. It had been a problem for a number of years dating back before the turn of the century. In most instances citrus bronze was interpreted as hungry signs because it was more prevalent on poor soils and on heavily fruited trees than on good soils.

The records show that magnesium was overlooked in the fertilizer program even for sands when the trends were away from the magensium carrying materials such as stable manure and unrefined products in the late 20's and early 30's. Economic conditions in the early 30's demanded the use of less expensive grades of fertilizers including synthetic nitrogen which was usually low, if not free of magnesium. Although Reed and Haas of California had experimentally shown under controlled studies the leaf patterns of magnesium deficiency, these leaf patterns were not associated with copper leaf or citrus bronze in Florida.

Since magensium was commonly used as a drug, it was considered as having toxic properties. This opinion prevailed for many years. There were cases of outright fear that magnesium was poison, yet the problem of citrus bronze was so acute that growers became alarmed, hunting for relief from every source. Some growers went to Washington and prevailed on the USDA to study the problem. This was done, and as a result an elaborate series of investigations were inaugurated in 1932 by the USDA and Florida Experiment stations to study this problem in several citrus counties. All of the extension agents working with citrus were alerted to the problem and were searching for practices that would alleviate it. The prevailing conditions indicated that it was a management problem because the poor and lighter soils showed the most definite and severest cases. Although some growers were reporting favorable results from the use of potash fertilizers carrying magnesium, this was given little consideration.

Practically all of the commercial fertilizer manufacturing companies in the state prepared special soil amendments to cope with poor trees, including citrus bronze. Since these amendments usually carried hardwood ashes and lime they produced favorable results. Yet no one pinpointed magnesium in hardwood ashes as being the remedy for citrus bronze. The poisonous effects of magnesium seemed to prevail. This was evident in the progress report by Barht to the Florida State Horticultural Society in 1934, in which he included only 1 to 2 ounces of magnesium sulphate for bearing trees. His rates of magnesium were very low compared to actual plant needs. Since Barht's report indicated beneficial results from several materials, namely, magnesium, potash salts, lime, dolomite and gyp-

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sum, he did not suspect that magnesium was the specific cure for citrus bronze. This opinion apparently prevailed through 1935 because he made no mention of changes in his report to the Florida Horticultural Society on "Some Recent Developments in Citrus Fertilizer Investigations" that year. Soil acids, low organic matter, poor drainage, poor care and ill-treatment seem to account for much of the bronze problems in Florida.

As with many scientific discoveries, the unravelling of this problem came by accident in connection with a series of soil amendment demonstrations initiated by the writer with county agents and Florida state agricultural extension service, for the purpose of improving poorly managed soils and soils with low organic matter. These amendments included several materials of which dolomite was one. The response was slow but definite the first year. Since the responses were not marked the first year, some of the cooperating growers were not in sympathy with continuing the demonstrations. But the responses the second year were more pronounced and positive, indicating that magnesium was the remedy for citrus bronze. The fact that all trees having bronze colored leaves showed definite responses to dolomite as well as to supplemental applications of magnesium sulphate, could not be refuted. Analysis of the citrus foliage and cover crops gave conclusive evidence that a deficiency of magnesium was the cause of citrus bronzing. The records were outstanding and attracted state wide attention in 1935.

The results of these demonstrations were published in February 1936 in the Florida Grower. The findings seemed to be conclusive and were confirmed by Tait's report to the State Horticultural Society that year.

It is significant to point out that doubt and fear regarding the use of magnesium prevailed among technical workers for several years after the first positive demonstrations had been shown. This was especially true for magnesium to be secured from dolomite, because dolomite was a form of limestone, and lime had experienced unfavorable records in the state for many years. This added to the fear and suspicion regarding the use of magnesium and dolomite. This fear was so strong that the producers of dolomite in the state became somewhat alarmed and inaugurated a series of studies in which excessive amounts of dolomite were used to determine if over-doses were harmful. The net effect of these studies showed no toxicities nor harmful effects of any kind from the use of excessive amounts of dolomite, thus relieving the tension and fear of its use.

The records indicate that most Florida's soils were acid and deficient in calcium and magnesium in the late 20's and 30's, and it is doubtful that any research findings have been more fruitful and beneficial to the agriculture of Florida than has dolomitic limestone which contains both of these nutrients. Its use has extended far beyond the bounds of the citrus belt, and it is difficult to understand now - after more than a quarter of a century of successful use - that technologists could have missed seeing its virtues. This is especially true in view of the large amount of magnesium utilized by crops, and the marked reduction in the use of magnesium carrying fertilizer materials - such as farm manures, bone meal, Kainit, etc. Yet this is the problem of progress and re-emphasizes the need for constant alertness by all leaders of applied agriculture.

IMCC SALES EXTENDED INTO SOU. ALABAMA JULY 1

Mulberry — Fertilizer sales and manufacturing responsibilities of International Minerals & Chemical Corporation's plant food office here will be extended into Southern Alabama on July 1.

E. Meade Wilson, manager of the IMC plant food area which has offices here, reported today that the corporation is adding the 10 Florida counties west of the Apalachicola river and 18 Southern Alabama counties to the area. Responsibility for a fertilizer mixing plant at Pensacola is also being transferred to the office here. The 57 Florida counties previously comprising the area are serviced by fertilizer plants in Jacksonville and here.

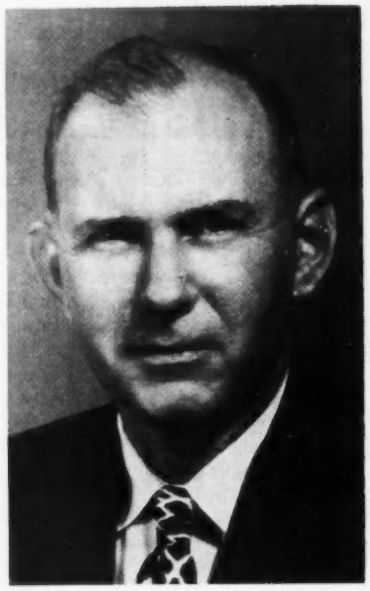
In the reorganization, the area based here is being divided into northern and southern sales districts with George Richardson of Tallahassee and Gallie Hackney of Fort Pierce as the sales managers, respectively.

The territory and Pensacola plant being added to Wilson's area have been supervised by an area office at Montgomery, Ala. It is being shifted to Tupelo, Miss.

JACKSON GRAIN CO. ANNOUNCES NEW PRODUCTION MANAGER

R. D. Jackson, President of Jackson Grain Company, Tampa, announces the appointment of Francis J. Davis as Production Manager.

Mr. Davis was formerly associated with Ralston-Purina Company as superintendent of the Tampa Branch.



Starting with R-P in 1929 as a trainee, Davis served in managerial and supervisory capacities at Wilmington, Deleware; Lubbock, Texas; and Davenport, Iowa before getting the Tampa branch assignment in 1945.

Davis has long been active in Tampa civic affairs, having served as a member of the Committee of 100 of the Greater Tampa Chamber of Commerce, a director of the American Red Cross, past president of Tampa Men's Garden Club and currently President-Elect of the Ybor City Rotary Club. He is a past president of the Florida Feed Dealers Association, and has received two President's Award citations from the Greater Tampa Chamber of Commerce.

FIELD DAY IS PLANNED FOR JAY

The West Florida Experiment Station's annual field day for farmers of the Jay area is scheduled July 10 from 10:00 a. m., according to Dr. C. E. Hutton, vice director in charge.

Highlights will include recent research studies on date and rate of planting corn, high fertility and residual fertilization studies on corn, and wheat and soybeans.

Rutledge Forecasts Vast Increase In State Citrus Crop Next 10 Years

The Florida orange crop may reach 120,000,000 boxes within 10 years Robert W. Rutledge, General Manager of Florida Citrus Mutual, said at Mutual's 10th Anniversary meeting in Winter Haven June 17.

Rutledge's long-range forecast was contained in a list of 10 predictions for the future of Florida citrus. He also visualized a year's frozen orange concentrate pack of 100,000,000 gallons by the end of the next decade.

"Depending on growing conditions, orange production in Florida at the end of the next five years will probably hit 100,000,000 boxes," he said. "By the end of the 10-year period, production could well go to 120,000,000 boxes.

"We will see an orange concentrate pack of over 100,000,000 gallons," he said, pointing out that U. S. population is expected to increase during the period to 200,000,000, "with an ever-increasing consumer expendable income."

This season's orange production, curtailed by last winter's freezes, is currently estimated by the U. S. Department of Agriculture at 83,000,000 boxes and the Florida Canners Association has reported a concentrate pack of slightly more than 57,000,000 gallons.

Rutledge also predicted an increase in the membership of Mutual to 10,500 during the next 10 years compared with the 9,027 reported at the meeting June 17.

Of the immediate future—the 1958-59 season—Rutledge said the outlook is "very favorable," with total grower's income "setting another record."

"The total national supply of citrus will be approximately 15,000,000 boxes less than the average production of the three seasons prior to the freeze," he said.

"Inventories of processed citrus products will be at a record low at the beginning of the season. Actually, many brands and can sizes will be out of stock.

"Florida's total citrus production in the 1958-59 season is expected to be about the same as this season, with less oranges, slightly more grapefruit and considerably more tangerines. Production in California will be substantially greater than this season. Texas will have a significant increase in both oranges and grapefruit.

ROBERT W. RUTLEDGE
GENERAL MANAGER
FLORIDA CITRUS MUTUAL

"This expected national orange supply will be less on a per capita basis . . . than it was 12 years ago."

Rutledge's other long-range predictions for the next 10 years:

There will be "considerably more" consolidations of Florida citrus groups. "More growers will get together. Fresh fruit packing houses will become larger and fewer. Sales organizations will get larger and fewer. More national companies will enter the picture."

"Exports of processed citrus products, including concentrates and exports of fresh fruits will increase to the point of utilizing 10 to 15 per cent of Florida's total orange production.

"Grapefruit production will remain relatively stable. Texas grapefruit production will increase but not to the post-war high level of 24,000,000 boxes, but probably somewhere between 15,000,000 to 18,000,000 boxes. (Texas' increase will come about gradually). California orange production in the next 10 years will be 25 to 30 per cent less than the average of the past 10 years.

"New products and new uses for present by-products will be discovered, which will result in additional profits to the industry.

"New citrus varieties and more hardy root stocks will be discovered .and used. New insecticides and fertilizers will be developed to improve fruit quality and color.

"New and less expensive methods for processing quality products will be discovered and placed in operation. Much higher concentration than now used in our present three to one orange concentrate product will become a reality. New methods of more economically packing and transporting citrus products will be discovered.

"Mechanical developments of harvesting and handling our crops from the grove to the packing house or processor will be realized.

"Advertising will take on new im-

portance with product identification being emphasized."

Referring to last winter's freezes, Rutledge said:

"This season has been filled with uncertainties, imponderables, and at times a measure of uncalled for panic."

He said that at the beginning of the 1957-58 season, when the USDA estimated there would be an orange crop of 102,000,000 boxes, "the supply and demand situation indicated there might be hardships for some in marketing the crop."

"Suddenly, Nature changed this outlook overnight," he said. "For some, disaster struck—for others the outlook became extremely favorable.

"The end result is that because of the decreased supply, the industry as a whole has received a total income in excess of any other season in our history."

Rutledge said that "the important thing to me now is to see what we can learn from what has happened."

"We have learned that as an industry we do not have to listen to and be influenced by scare and panic statements when a seemingly adverse event strikes," he said. "There are always many who lack patience, who lack understanding and who, most of all, lack the ability to see beyond today.

"Your organization, immediately following the freeze, had this to say:

"This is the time . . . not to believe rumors, or to act on hearsay.

" . . . 'The smaller the volume of oranges and other citrus available, the greater becomes the value of all citrus.

" 'In past situations of this kind, a great deal more fruit was eventually used in one way or another than was thought possible immediately after the cold weather had occurred . . . '

"In other words your organization proceeded on the basis of cautious optimism."

He said the industry learned to make better quality concentrates as a result of research following the freezes.

"I believe further," he said, "that the entire industry has been very fortunate to have the Florida Citrus Commission, with its regulatory powers, take action after action that eventually brought benefit to all."

Referring to wholesale FOB prices of orange concentrate which reached a low level last year about this time, Rutledge said:

"It will be a long, long time (if ever) before $1.00 concentrate is seen again."

He said the industry had learned this year that correct interpretation of the law of supply and demand "will keep us from giving our products away."

He said he was convinced that the industry "has failed to keep pace with changing times, failed to keep pace by under-valuing all fresh and processed citrus."

However, he cautioned the industry not to "over-price or price for only the immediate profit."

On the growers' fair share of the consumer's citrus dollar, for which he said Mutual constantly aims, Rutledge said:

"For the grower to receive his fair share of the consumer's citrus dollar it must be worked for, it must be planned for and, in some cases, it must be fought for. This, Florida Citrus Mutual, through its Board of Directors, can and will do."

Explaining the grower's fair share, Rutledge said:

" . . . It is what we believe the grower should receive on the tree for his fruit, allowing for all the proper marketing charges plus a fair profit to the people who perform the many necessary services in getting the fruit and products into the hands of the consumer.

"A change of five cents per dozen six-ounce cans in FOB quotations for orange concentrate should affect the grower's share on-tree by about 12 cents per box.

"When the consumer price is 25 cents per can . . . the grower's share of the consumer's citrus dollar should be about 50 per cent . . . when the consumer price is 12 cents . . . the grower's share drops to about 20 per cent."

Rutledge said that Mutual's Board of Directors, "making hundreds of decisions annually, certainly is the big determining force behind the great understanding and confidence that exist in this industry today."

MULBERRY BOY WINS IMCC SCHOLARSHIP

Paul J. Sheffield, Mulberry High School graduate, has been awarded a one-year scholarship by the Plant Food Division of International Minerals & Chemical Corp., E. Meade Wilson, area manager of the division announced recently.

The scholarship, one of four awarded in a national competition, is based upon the candidate's school record with special emphasis on participation in 4-H Club activities. Winners are selected by a committee of educators and a company representative.

Paul, one of the 10 children of Mrs. Lithit Sheffield of Brewster, was a high school honor student and a leader in school activities and 4-H Club work. He was president of his junior class, a member of the student council, Library Club and Key Club. Active in 4-H Club for seven years he has held office for five years. His other activities include a 3-year membership in the FFA.

USDA TESTS PROVE AGAIN ZERO STORAGE NECESSARY TO PRESERVE QUALITY OF FROZEN CONCENTRATE . . .

Frozen concentrated orange juice maintained its good quality for five years when stored at -4° F., but showed evidence of deterioration when storage temperature was 5° F., and became unpalatable under storage at 10° F. This proves once more that storage temperatures are an important factor in the keeping qualities of the product, and that for retention of optimum quality storage temperatures should be maintained below zero.

The five-year tests were carried out by Theo. J. Kew, of the U. S. Citrus Products Station, Winter Haven, Florida, one of the laboratories of the Southern Utilization Research and Development Division of the Agricultural Research Service, USDA. Three years was the time originally planned for the tests, but the surprisingly good condition of the concentrates stored at -4°F. at the end of three years promoted continuation. At the end of the five-year period, samples stored at -4° showed no change in cloud, gelation was not impaired, and off-flavors were not detected. Some loss of cloud was observed in samples held at 5° F., and cloud loss occurred early in the samples stored at 10° F. All of the latter showed gelation.

Details of the storage tests and the results are given in a paper, **Five-Year Storage of Frozen Concentrated Orange Juice at -4°, 5°, and 10° F.**, published in the Proceedings of the Florida State Horticultural Society for 1957.

Encouraging Picture Of European Market Seen By Commission

An encouraging picture of export possibilities for United States citrus fruits, and more particularly Florida, in European markets was painted for the Florida Citrus Commission recently by a government marketing expert.

But it will require aggressive merchandising and high quality fruit and products to overcome foreign competition and get European consumers to spend their money for U. S. citrus, said J. Henry Burke of Washington. This is the crux of a special report on the citrus export outlook made to the Commission at its 1958-59 organizational meeting. Burke is a marketing expert, specializing in fruit and vegetable exports.

"The citrus industry of the United States has had an important share of the foreign citrus market," Burke said. "Exports are important to us."

He said that in 1957, according to Bureau of the Census data, U. S. exports of major citrus fruits and citrus products were worth over $91 million.

"Of this amonut, about $47 million worth went to Canada," he stated. "Other markets took about $45 million worth of U. S. citrus. It is in these non-Canadian markets, mainly Western Europe, that we feel the full force of foreign competition."

Burke said production from increased orange plantings in the Mediterranean region and greater production from areas in the Southern Hemisphere, will give the U. S. some tough competition. Increased grapefruit plantings, especially in Israel and Jamaica, will also complicate the picture on U. S. grapefruit exports, he said.

As to the outlook for fresh citrus, he said the U. S. in the near future "will probably do well to keep orange exports at their present level." Volume of our orange exports in the next ten years will depend largely on the growth of Mediterranean and Southern hemisphere production.

In grapefruit exports, he saw the greatest possibility.

"It will not be easy to 'sell' grapefruit to Europeans," he declared, "but it will be well worth a sustained effort."

Turning to processed citrus products, Burke said there is widespread foreign interest in processing more fruit.

"Several countries are looking to this use as a solution to the problem of marketing fresh fruit," he stated. "New processing plants are planned in many areas of the world, and we may expect a steady growth in processing capacity during the next few years."

The amount which will be actually processed, he added, will depend upon world markets.

For the past two years, about two-thirds of U. S. processed citrus products were exported to Canada, with Western Europe being the next most important market, he said. But while this is generally true, he cited a few exceptions.

"Large quantities of frozen orange juice concentrate are sold in Canada, but very little hot pack (processed unrefrigerated concentrate) is sold there," Burke said. "Western Europe is our best export market for that item, while only small quantities of frozen juices are sold there."

Exports of U. S. citrus, excluding lemons, amounted to $52,579,000 in 1957, according to Burke's figures. Of this, $22,525,000 worth was purchased by countries other than Canada. Purchases of citrus products by Western European countries, consisting of sections, single strength juice, hot pack concentrate and frozen concentrate, amounted to $2,295,000. Purchases of orange products—single strength juice, hot pack concentrate and frozen concentrate—by these same countries amounted to $8,371,000. The U. S. also sold $1,049,000 in orange oils to Western Europe, he added.

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P. O. Box 1304 Winter Haven, Fla.
Phone CYpress 3-4716

R. E. Lassiter, Jr.,
1168 Lakeshore Blvd.
Lake Wales, Fla.
Phone 3-3813

The lack of rains for the past month in this area has necessitated quite a lot of irrigation. We have had some few isolated showers.

Most of the growers have finished their summer fertilizer application. The young trees should be receiving fertilizer throughout the summer months to insure maximum growth.

There has been quite a lot of pruning going on this summer in the groves getting rid of the dead wood caused by the cold damage last winter.

The rust mite population has increased rapidly in the past few weeks. Due to the dry weather growers cannot go ahead and apply their summer oil and zineb at this time. Where the rust mites are present some growers are having to apply sulfur dusts or sprays to control these mites before they will be able to apply oil.

SOUTH HILLSBOROUGH AND MANATEE COUNTIES

Eaves Allison
P. O. Box 365 — Sarasota, Fla.
Phone Fulton 8-2611

Citrus groves in this area are showing good recovery from past freeze and water damage. Young trees which have been cut off below cold damage show vigorous growth and are coming back fast. Of course a great many in some locations have passed into the great beyond and are being replaced with new stock. Nurseries are again showing up green and flourishing with all dead trees removed.

Some groves were killed back so badly as to make the value of salvage questionable, as far as the tops are concerned. Fortunately these are in the minority.

The new fruit crop is sizing up well, and most fertilizer applications have gone on early to give a much needed boost to the recovery program.

Tomato crops — in fact most all truck crops and watermelons in this area — were thrown so late as to bring the harvest in with other producing sections of the country. The less said about the effect of this on prices the better. May it suffice to remark in passing that the 1957-58 vegetable growing season was not broken by anything good happening at the end!

SOUTH HILLSBOROUGH AND NORTH MANATEE COUNTIES

Jack Baxter
1510 South Habana
Tampa — Phone 82-6554

It certainly has been dry for the past six weeks. We have not had a rain of any importance since the last of April. Some citrus groves are beginning to show signs of wilting.

Six-spotted mites seem to be on the down grade, but rust mite infestations have really jumped up in many groves in the past week. (Written June 17th.)

Most of the East Hillsborough County vegetable crop has been harvested but I have noticed several farmers preparing to plant a summer crop. I sure hope they can produce a money crop since many did not in their spring deal.

SOUTH, POLK, HIGHLANDS, HARDEE, DeSOTO AND SARASOTA COUNTIES

C. R. Wingfield
Avon Park, Fla.
Phone GLendale 2-81881

By the time of this publication the summer application will have been finished and the growers are busy with their oil spraying. With the warm dry weather the purple mite and rust mite have been very active and the oil plus zineb was used early where moisture and fruit size would permit.

Another big job of pruning freeze damaged trees is under way and perhaps will last most of the summer. Early pruning jobs in many cases are having to be gone over because there continues to be more die back. Young trees are responding very nicely to treatment but many acres had to be cut back almost to the bud union.

The fruit crop appears to be progressing very well, however the quantity will be well below normal. Fruit is sizing fine up to mid-June but if it continues we will need more rain. Many growers have been irrigating and more will follow suit if we do not have rain by the last of June.

Fruit buyers have been rather active in bulk and box deals. Offered prices range from $1.50 to $2.50 depending upon variety and quality.

WEST HILLSBOROUGH AND PINELLAS COUNTIES

J. A. Hoffman, Lutz, Florida
Phone WE 9-2276

For the past month it has been very dry in this section with only a few scattered showers. Due to the dry spell oil and zineb spraying have been delayed. In some grove rust mites are very bad and a sulfur dust is being applied to control the rust mite. Oil and zineb should be applied 3 or 4 weeks after the sulfur dust providing there is sufficient moisture for oil spraying.

The summer application of fertilizer will be completed in this area by the last of June.

Melon growers started shipping melons from this area the last of May. Most growers report a heavy crop with good cutting quality, but due to the cold weather through the middle of April melons were 20 to 30 days late.

NORTH CENTRAL FLORIDA

V. E. Bourland
Winter Garden, Fla.
Phone 107

We are having hot, dry weather. Some groves being irrigated, and young trees being watered. Some growers still spraying, but most of them have finished fertilizing, and lots of pruning being done. Only a fair crop of fruit and it is still falling. You can't tell yet about crop. Cover crops are good.

Melon growers are busy trying to get their money back. They have had a time this year. Most melons are small on account of the dry weather we had and having. I have only heard one grower say that he had gotten his money back.

Pastures are needing rain, but cattle are looking very good.

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Uncle Bill Says:

We sometimes wonder jist what would happen if'n you or me, er any of the rest of the growers over this great state of ours, could control the weather jist as we would like to have it . . . if'n we could turn on the rain jist at the exact minute we would like to have it so it would be helpful to our crops . . . or if we could turn the sun on and off at will, so that we could control the temperature at jist exactly what we felt would be right . . . 'n of course, we would want to control the wind, too, and keep the hurricanes as far away from our crops as possible, we wonder if'n we would be happy with the results.

Could be that some of our neighbors, or some other growers in other sections of the state might not be happy with our selection of weather control, 'er it might be that what we'd done to the weather might encourage pests to work harder and more successfully (from their standpoint) than they're doin' now.

It could be, too, that if our control of the weather worked out all right fer most everyone, from the standpoint of growin' crops, that we might grow sich big crops we'd find it hard to sell 'em all.

'Course Nature ain't goin' to turn her job over to us . . . and if we stop to give the matter serious thought it's possible that over the long run it's jist as well fer us to confine our dealin's with the weather to fussin' and gripin' about it, fer it's jist possible that we might git too durned lazy to do the production jobs we've all got to do if all we had to do was to sit back in an easy chair on the side porch and tell the weather how we wanted it to behave every hour of the day.

They's lots of other things we kin do to produce fine fruit that we kin control, so maybe we'd jist better stick to that part of the job, 'n leave control of the weather right where it is now, even though we may not like the way it's bein' handled.

More Citrus Was Processed In 1958 Than Last Year

Florida processed a bigger percentage of the orange crop into frozen orange concentrate this season than last, the Florida Citrus Commission was told today.

Joseph C. Fuller, assistant director of administration and statistician, said 53 per cent of the orange crop or a total of 44 million boxes went into the production of frozen orange concentrate this season, as compared to 52.4 per cent last year. He added quickly, however, the industry only produced 57,200,000 gallons of the product as compared to 72,011,000 gallons last year. This cutback is attributed to a series of severe freezes in Florida last winter and lower yield of juice.

Fuller's utilization report was the last for the current season.

More of Florida's grapefruit crop was processed into frozen juice this year also, according to Fuller. He said 10.7 per cent of the crop, or a total of 3,313,000 boxes went into the product, an increase of over three per cent from the 2,683,000 boxes used last year.

Only 18.4 per cent of the orange crop was packed and shipped as fresh fruit this year, almost four per cent less than during the same period last year. Actually, 15,300,000 boxes were shipped in this channel during the past season as compared to 20,680,000 boxes last year.

A larger portion of the orange crop, too, went into canned juice and salad this season as 15.4 per cent of the crop found its way into these products, up almost three per cent from last year. A total of 12,800,000 boxes of oranges were used in this channel as compared to 11,643,000 last season.

Other products, rounding out a total utilization figure of 83 million boxes of oranges, consisted of frozen blended juice, hot pack (non-refrigerated) concentrate, chilled juice and salad, interstate by-products and home use. Last season, orange utilization was 93,000,000 boxes.

Florida's fresh grapefruit shipments, Fuller said, also fell off some this season. A total of 13,260,000 boxes representing 42.8 per cent of the crop went into packed boxes this season as compared to 16,813,000 boxes or 45 per cent last year.

Canned grapefruit juice, second largest utilizer of the crop, fell off some this season also. Only 29.6 per cent or 9,180,000 boxes went into this product this season as compared to 31 per cent or 11,567,000 boxes last year.

Other products, making up the final utilization figure on grapefruit, were strung out among six items. These were grapefruit sections, frozen concentrated blend, processed concentrate, chilled juice and sections, by-products and home use. Actually, Florida used 31 million boxes of grapefruit this season, 5,600,000 less than last year, Fuller said.

'GREATER EFFECTIVENESS' ADVERTISING FOR CITRUS MAY BE DEVELOPED . . . .

Lakeland — An advertising program of "still greater effectiveness" for Florida citrus may be developed during the next three years, Florida Citrus Mutual officials suggested in a issue of Mutual's weekly publication, the Triangle.

The Triangle article, "Brand Advertising and Its Effect on Price," is one in a series on supply and demand.

Pointing out that during the next three years there will be a relatively reduced supply of Florida citrus because of last Winter's freezes, and that demand will be more in line with expected supply, the article suggested that "during this breathing spell . . . maybe there is an opportunity to analyze and plan for the future".

"Almost everyone in the industry would like to see a continuing advertising program instituted which would result in specific product identification . . . Perhaps up to now the timing has not been right, but during this breathing spell, which we now have, maybe there is an opportunity to analyze and plan for the future."

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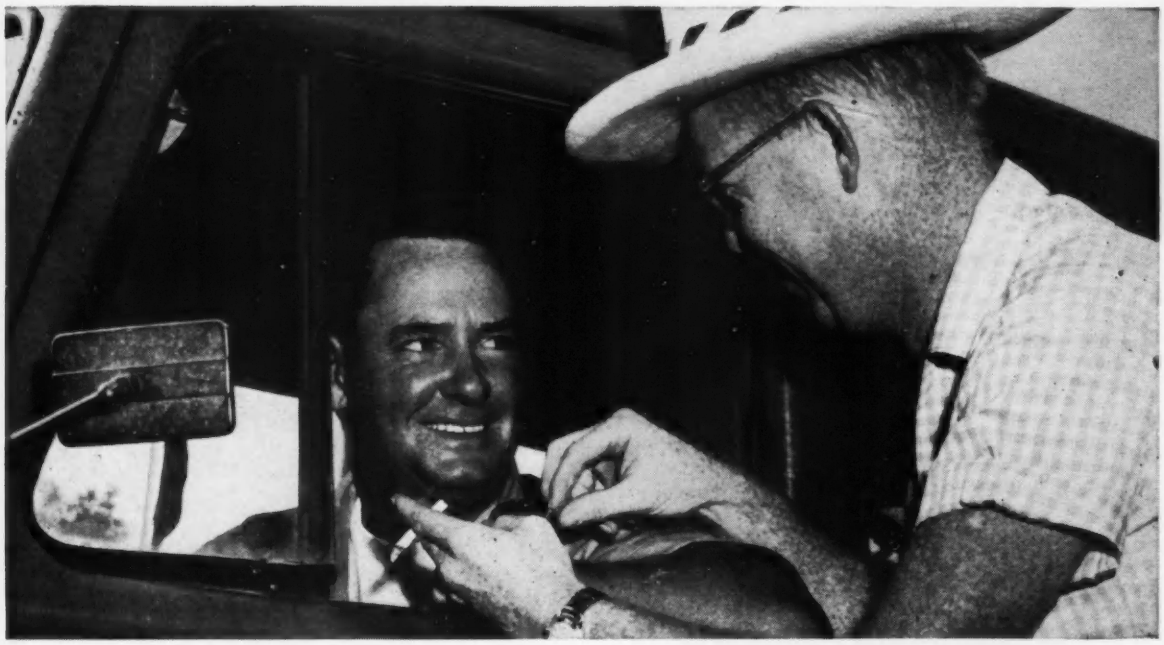

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